mum by pointed cars splitting the air in front, and preventing suction in the rear, while in transit; reducing the cross-section of cars to a minimum, and enclosing the wheels and electrical equipment within the walls of the same to offer as little resistance to the air as possible; telescoping the cars of a train to present to the air an unbroken surface; special switch for rails; keeping the centre of gravity of the whole train below the axles. Patents have also been secured for a passenger system which applies to the conversion of existing steam railroads into electric railroads, which cover the only safe mode of rapid transit for passengers.

A series of experiments have been made at Laurel, Md., to show what the Weems railway system will do. This experimental line is a circuit of exactly two miles. Over this route there are 29 changes of grade, some of them very heavy, even to the extent of 108 feet to the mile. The generating plant there contains all the electrical appliances necessary to the attainment of high speed by a railroad-train. There is also special machinery for experimentation, and the perfecting of all mechanical and electrical inventions tending to advance and improve the system. All tests of speed have been made upon heavy grades and curves combined, too great ever to be required in the construction of a commercial line: therefore the experiments demonstrate the high rate of speed which will be obtained upon lines built for business puposes. At this experiment station 2 miles per minute are made around a heavy curve, or the equivalent of 180 miles an hour, or 3 miles a minute, on a level track. Prior to the inauguration of this system, 20 miles per hour was the fastest time ever made by any kind of electrical railroad travel.

At the experiment station there are no extensive works; and the motor-car, when it comes out from under its shed in obedience to the will of the engineer in the distant plant building where the electric dynamo generates the current, moves deliberately, slowly, and with absence of all sound. This cigar-shaped car, painted a bright red and moving sharp end foremost, at first sight does not seem a wonderful thing as it goes quietly along the track; but later, when the engineer at the dynamo puts on more power, or, as a steam-car man would say, more steam, and the creeping thing on the ground hastens its movement until it fairly flies, and becomes a moving speck of red, spectators feel the progress being made in applied science, and talk of the wonders of electricity, and the great things it will accomplish in the active affairs of life in the near future. All who have witnessed the successful trials at Laurel are impressed with the great stride made in the matter of rapid transit by electricity.

Arrangements are now being made for the building of an extended road between distant cities, and Baltimore will be one of the stopping-points on the line.

The officers of the Electro-Automatic Transit Company of Baltimore City are Dr. Julian J. Chisolm, president; O. J. Smith of New York, vice-president; Alex. Brown, treasurer; William M. Pegram, secretary; David G. Weems, general manager; J. J. Chisolm, Edward B. Bruce, B. F. Gambrill, O. J. Smith, Robertson Taylor, Franklin J. Morton, Alex. Brown, S. E. George, William M. Pegram, Edwin F. Abell, David G. Weems, directors.

Mr. David G. Weems of Baltimore is the inventor of the system. Mr. O. J. Smith, the vice-president, is president of the American Press Association of New York. The officers of the company have made frequent visits to witness the various trials, and with each successful increase of speed made have enlarged their expectations of future results.

WHO ARE THE AMERICAN INDIANS?[1]

WHEN Columbus discovered America, he discovered not only a new continent, but a new people, — the American Indians. From one end to the other of its broad expanse the continent was occupied by Indian tribes that had held the land from time immemorial, — so far, at least, as their own traditions aver, — knowing nothing of any country but their own. The commonly presented picture of the Indians as they appeared at the time of the discovery is that of a horde of wandering savages, half or wholly naked, living on roots and herbs, or existing by the capture of wild animals scarcely more savage than themselves, and the chief object of whose existence was to enslave, to torture, and to kill each other. Those who hold such opinions have ever taken a hopeless view of the Indian's present, and a still more hopeless view of his future. Such a picture conveys a totally false impression of the Indian, and of the state of culture to which he had attained at the era of the discovery. Though still living in savagery, he was in the upper confines of that estate, and was fast pressing upon the second stage of progress, — that of barbarism; that is to say, he had progressed far beyond and above the lowest states in which man is known to live, to say nothing of the still lower conditions from which he must have emerged, and had travelled many steps along the long and difficult road to civilization.

Already he had become skilful in the practice of many arts. Though the skins of beasts furnished a large part of his clothing, he had possessed himself of the weaver's art; and from the hair of many animals, from the down of birds, and from the fibres of many plants, he knew how to spin, to weave, and to dye fabrics. Basket-making he had carried to so high a degree of perfection that little further improvement was possible. The potter's art also was his; and, though his methods were crude and laborious, the results achieved, both as regards grace of form and ornamentation, may well excite admiration at the present day.

Copper had been discovered, and was mined and roughly beaten into shape to serve for ornament, and, to some slight extent, for mechanical use. In Mexico and Peru, gold, silver, and copper were worked; and many authors contend that the method of making bronze, an invention fraught with tremendous possibilities, had there been discovered.

In much of South and Central America, Mexico, and the eastern parts of the United States, so important an advance had been made in agriculture that it furnished a very large part of the food-supply, and it should not be forgotten that the chief product of the Indian's tillage, maize or Indian-corn, which to-day furnishes a large part of the world's food, was the gift of the Indian to civilization. A scarcely less important contribution to mankind is the potato, the cultivation of which also originated with the Indians. A third important agricultural product, though less beneficial, is tobacco, the use and cultivation of which had been discovered centuries before the advent of the European.

"Architecture" may seem like a large word to apply to the dwellings of the Indians; nevertheless many of their houses were more substantial and comfortable than is generally supposed, while in the North-west many tribes reared dwellings of hewn planks, sometimes as large as 210 feet long by 30 feet wide, which were capable of accommodating several hundred individuals. More pretentious and durable were the communal houses of mud and stone reared by the pueblo people of Arizona, New Mexico, and Mexico; while farther south, in Central and South America, were edifices of hewn stone, which from their dimensions, the size of some of the blocks contained in them, and the extent and ornate character of the ornamentation, justly excite the wonder and admiration of the traveller and archæologist.

The advantages of a beast of burden had been perceived, and, though the human back furnished by far the greater part of the transportation, yet in North America the dog had been trained into an affective ally, and in the Andes the llama performed a similar office. Insignificant as was the use of the dog as a carrier, its employment cannot well be overestimated as a step in progress, when it is remembered that the plain's tribes that most employed it lived in the midst of the buffalo, — an animal which must have become of prime domestic importance in the never-to-be-enacted future of the Indian.

The need of some method of recording events and communicating ideas had been felt, and had given rise, even among the ruder tribes, to picture-writing, which in Mexico and Central America had been so far developed into ideographs, popularly called hieroglyphics, as to hint strongly at the next stage, the invention of a true phonetic alphabet. Nay, more: the Mexicans and Mayas are believed to have reached a state of true phonetic writing, where characters were made to represent not things, as true ideographic writing, but the names of things and even of abstract ideas; and this is a stage which may be said to be on the very

[1] Abstract of a lecture delivered in the National Museum, Washington, D.C., March 30, 1889, by H. W. Henshaw.

threshold of one of the proudest achievements of civilization, that of a phonetic alphabet.

Instead of living in an unorganized state, where each man was a law unto himself in all things, the Indians lived under organized forms of government, rude enough indeed when compared with the highly organized system of civilized nations, but marking an essential advance on the conditions attained by savage peoples in other parts of the world. The chieftaincy was transmitted by well-understood laws, or, as in some tribes, was more purely elective. Their social system was very ingenious and complex, and, being based largely upon kinship ties, was singularly well fitted for the state to which they had attained, of which indeed it was simply an expression and outgrowth. In many sections a considerable advance had been made in political confederation, and neighboring tribes combined for defence and to wage war against a common enemy. They had invented many and singularly efficient laws to repress and punish lawlessness against the individual and the social body, and as a consequence they enjoyed almost entire immunity from theft and many other crimes.

The development of religious ideas among our Indians is a curious and instructive study. Though the Great Spirit and the Happy Hunting Ground which missionaries and theologians thought they had discovered among them are now known to have had no existence, the Indians had by no means reached the state of culture in which they were found without developing religions. Their gods or fetiches were innumerable, their priests endowed with immense influence, and their ceremonies of devotion and propitiation were as devout as they were elaborate. The precision of the beliefs of many tribes and the elaborateness of their rituals are simply astonishing. Thus their advance in the domain of religious thought equalled, if it did not surpass, their progress in some other directions.

If by medicine we mean the rational treatment of disease, the Indian can be said to have learned only the rudiments of the healing art. Medicine, in so far as it was a distinct profession, was almost wholly in the hands of the medicine-man or shaman, who filled the twofold office of priest and doctor. Neither the theory nor the practice of the shaman had in it any thing that was rational and very little that was efficacious, except through the influence exercised over the mind of the patient; in other words, except so far as the shaman was a faith-curer. Whatever that is marvellous in the modern cases of faith-cure can be more than matched out of the practice and experience of the shaman, who learned his trade long before the European came to these shores. He who would see the Indian shaman need not seek the wilds of the Far West. He may find his counterpart on Pennsylvania Avenue. The whole medical practice of the Indian shaman was based upon the idea that all disease was the effect of evil disease-spirits that had obtained lodgement in the body, or that it was caused by witchcraft; and, so long as practice was directed to the dislodgement of these spirits, no rational treatment was possible. I am aware that the above idea of Indian medicine is contrary to popular belief, which, to some extent at least, is in harmony with the claims of alleged Indian doctors of white extraction, who claim to have derived their skill and their herbs directly from the hands of Indian experts. Recent and carefully conducted investigations on this subject, however, fully substantiate the above statements. Though roots and herbs were employed in the treatment of nearly all diseases, they were chiefly used as adjuncts to the charms and sorceries of the medicine-man. Often they were not given to the patient at all, but were taken by the medicine-man to heighten his power over the disease-spirits. Often they were applied by being rubbed on the body of the patient, or by being blown in the shape of smoke on the afflicted part.

Among the Indians was found flourishing to a remarkable degree the so-called doctrine of seals or signatures. A few examples of the doctrine derived from the eastern Cherokee by Mr. James Mooney may prove of interest. Doubtless you are all familiar with the cone-flower. Thhe Cherokee call it deer-eye, and from its fancied resemblance to the strong-sighted eye of the deer, and its connection by name (for the Indian believes that there is a potent connection between the name of a thing and the thing itself), it is used as a wash for ailing eyes.

The common purslane (*Portulaca oleracea*) is used as a vermifuge, because the red stalk looks like a worm.

An infusion of the roots of the hoary pea (*Tephrosia virginiana*), called devil's shoe-strings in the South because of their toughness, is used by the Cherokee ball-players as a wash to strengthen their bodies, and by the women as a hair-wash to strengthen it and keep it from falling.

Who of you has ever walked in our woods without getting on his clothing the common beggar's lice (*Desmodium*)? How tenaciously they stick, you all know: so do the Cherokee; and because the burrs stick fast, they use a tea made of them to strengthen the memory. The Cherokee at least can dispense with the service of a Loisette.

You whose ambition it is to be good singers have only to drink a tea of crickets, according to the Cherokee, for does not the cricket possess a fine voice, and doth he not sing merrily?

The tendency of the human mind to speculate and to draw inferences — a tendency common alike to the savage and the civilized man — cannot be held in check forever, however strong the bonds; and just as knowledge and science escaped from priestly thrall within the history of civilized times, so a certain small amount of knowledge of the therapeutical use of drugs was gaining ground among the common folk of the Indians. It was fairly to be called old woman's practice, as it was largely in their hands. It grew out of observation. Infusions of certain herbs produced certain results, acted as emetics or purgatives, and hence these herbs came to be employed with something like an intelligent purpose. Many of the herbs used were absolutely inert; many were harmful, of course, since where there is practically no true diagnosis and no correct knowledge of the effect of drugs there can be no really intelligent selection of remedies; but in the case of certain simple diseases, herbs, the actual cautery, and, above all, the sweating process, were beginning to be recognized by the common folk as serviceable, and to be employed to some extent without recourse to the shaman.

As the child must creep ere it can walk, in such theories and treatment, childish though they may seem, may be discerned the beginnings of the noble science of medicine, which, having largely cast aside the superstitions that hampered its infant steps, now walks erect; and, although of late she seems to have revived the beliefs of her childhood, her handmaiden, science, bids her call the demon disease-spirits ignorance and vicious habits; the diseases themselves, bacilli or germs. The Indian believed that the white man carried the spirit of small-pox in bottles, and let it loose among them. Modern science actually does bottle the small-pox germs, and germinate them at will. So the Indian theory of disease reappears in a new form.

Such in briefest outline are some of the achievements of the Indian as he was found by civilized man. Whatever value may be placed upon them, whatever rank may be assigned them in the scale of human efforts, they were at least his own; and some of them compare favorably with the record of our Aryan ancestors before they split up into the numerous nations which have done so much to civilize the world. Many, I am aware, hold that the Indian had progressed as far towards civilization as his capacities admitted. Others have held, and possibly some now hold, that he was already on the decline: they see in his crude ideas and rude inventions only the degradation of a higher estate; in other words, instead of a savage preparing to enter civilization through the necessary halfway state of barbarism, he is held a half-civilized man lapsing into savagery. Such views, it is needless to say, find no favor in the mind of the evolutionist. To him the achievements of the Indian are only the mile-stones which have marked the progress of every civilized nation, in its march from what it was to what it is; to him the chief value and significance of his studies of the mental state of the Indian, as expressed in his mythology, his medicine, his social and political organization, or in his more concrete arts, is the fact that in them he reads the records of his own past. If there be any truth whatever in the theory of evolution as applied to human progress, only one inference can be drawn from the history of the Indian race as it appears in historical pages, and in the no less eloquent records interpreted by archæologists. This inference is, that, starting in its career later than some other races, or being less favored by circumstances or conditions of environment, or pos-

sibly being less endowed, the Indian, despite all, had progressed an immense distance towards civilization; that the race contained all the capabilities for a further advance and for achieving a civilization of its own, differing, it may be, markedly from our own, as other civilizations differ, but still containing within itself all the essentials of that wonderfully complex thing called civilization. Such, at least, is the lesson evolution teaches.

Hardly had the new land been discovered when the question arose, Who are the Indians, and where did they come from? Naturally enough, the Indian had his own answers to these questions. It may almost be said, as many tribes, so many origins. A large number of tribes claim to have originated in the localities where they were first found by Europeans, where they emerged from the ground or came from the recesses of some neighboring mountain. Somewhat more poetical is the idea of the Aht of Vancouver Island, who allege that animals were first created at Cape Flattery, and from the union of these with a star that fell from the skies resulted the first men, their ancestors. Puerile these answers certainly are, yet who will maintain that they are more so than the theories of origin held by the Greeks and other classical peoples?

Who, then, are the American aborigines? For Columbus and his followers there was but one answer to the question. As he had reached the eastern shores of India, the people must be Indians, and his error is perpetuated to-day in the name. Later, when the newly discovered country was found to be not an old, but a new continent, the question of the origin and consanguinity of the Indians was renewed. So strongly tinged with religious thought was the philosophy of the day, that biblical sources were naturally first appealed to, to solve the knotty problem. As mankind was supposed to have originated in Asia, and as all but the ten lost tribes were accounted for, they were rationally appealed to for the origin of the Indian. Perhaps the best exponent of the belief in the Jewish origin of the Indians was Adair, who published his celebrated essay in 1775.

There is a theory of origin to suit the tastes of all. If you have a special bias or predilection, you have only to choose for yourself. If there be any among you who decline to find the ancestors of our Indians among the Jews, Phœnicians, Scandinavians, Irish, Welsh, Carthaginians, Egyptians, or Tatars, then you still have a choice among the Hindu, Malay, Polynesians, Chinese, or Japanese, or, indeed, among almost any other of the children of men.

Preposterous as may seem many of the theories above alluded to, nearly all of them rest upon a certain basis of fact and comparison. Many, at least, of the similarities of thought, custom, methods, arts, religions, and myths from which the theories are deduced indeed exist, though false analogies permeate them all. The thread of fact which sustains the theories is, moreover, far too slender to bear the weight put upon it. Erroneous hypotheses like the above have, however, been productive of great good in pointing out and emphasizing some of the most useful lessons which the student of anthropology of the present day must learn and ever keep in mind. Of these, perhaps the most important is that the human mind is everywhere practically the same; that in a similar state of culture, man, in groping his way along, will ever seek the same or similar means to a desired end; that, granting the same conditions of environment, man acts upon them, and is acted upon by them, in the same way the world over: hence in large part arise those similarities of customs, beliefs, religions, and arts, which have been appealed to as evidences of genetic connection or of common origin, when in fact they are evidences of nothing but of a common humanity.

Likewise up to the present time the attempts to classify mankind by his physical characters have produced discordant results, and little dependence is to be placed upon the results themselves or upon the theories arising therefrom which relate to the more profound question of the origin of races. In turning to the test of language, if doubt and uncertainty were left behind, and harmony and agreement took the place of discordant views, we might count ourselves fortunate indeed. Yet, though still in its infancy as regards future possibilities, and while it needs and welcomes the aid of all the other sciences to solve the complex questions which come properly within its domain, it is unquestionably our best guide in problems relating to the origin and relationship of the races of mankind.

The evolution theory sees evidences of growth and development in every language spoken by man. Comparing the languages of highly civilized peoples with those of lower culture, it finds in the latter evidences of the successive stages through which all languages have necessarily passed in their upward growth. It notes the fact that among lower peoples languages are less and less highly organized, and that among them signs are much more freely used than among the higher; that the sign-language is capable of a development among savage peoples and mutes so wonderful as to be the medium of all classes of ideas; and, noting these, it is prepared to believe, though it has not yet proved, that there was a time in the dawn of the human race when organized vocal speech was unknown, and when the fingers, the facial expression, and the postures of the body, were the chief if not the sole means possessed by man to communicate to his fellows his simple wants and ideas.

Before proceeding further, let us glance briefly at some of the methods employed by linguistic students in their efforts to unlock the mysteries of linguistic relationship. How the comparative study of language is to be carried on, linguistic students are well agreed. Since language is made up of words, each word being the sign of a thought, the science of linguistics is largely the study of words: in other words, it is the tracing word genealogies by means of their etymology. By stripping words of the accretions they have received in the process of time, they may be resolved into roots; and by the comparison of these roots the philologist obtains proof of relationship, and classifies languages into linguistic families.

It may be well at this point to define clearly what linguists mean by a linguistic family. A linguistic family is a group of languages which have sprung from a common parent language. The first requisite of a linguistic family, therefore, is that the languages composing it shall be related genetically; the second, that they shall not be related to the languages of any other family. Each family thus consists of a group of languages wholly disconnected from all other families. The chief danger to the student in dealing with such material is to mistake apparent for real resemblances, and to be led to present false word analogies as evidences of true genetic relationship.

That linguistic science is competent to deal with problems of great magnitude and intricacy, and that there are students who are capable of applying its varied resources, best appears in the grand achievements which concern the group of languages known as the Aryan or Indo-European family, in which our own English tongue takes a prominent if not the first place. It is almost wholly as the result of linguistic studies that the component members of the large and important Aryan family are now recognized, and the history of its earlier members reconstructed to a remarkable degree. The family contains eight groups of distinct languages. Among many others, the family includes as offspring from one source Sanscrit, Hindu, Romany or Gypsy, Persian, Armenian, Welsh, Cornish, Irish, Scotch, Latin, Italian, French, Spanish, Portuguese, Albanian, Greek, Bulgarian, Russian, Servian, Polish, German, English, Dutch, Swedish, Danish, Norwegian, and many others. Though one of the largest, and, by reason of its history and the prominent part it has played in the civilization of the world, the most important, the Aryan family is only one of many linguistic families, each one of which is made up in the same way of a greater or less number of related languages. Such are the Bushman and Hottentot of Africa, the Semitic of Asia and Africa, the Chinese, Australian, and many others. The related languages which make up linguistic families vary indefinitely in the amount of likeness they bear to each other. They are often so much unlike, that those who speak them cannot understand each other; as, for instance, English, German, and French. Though these languages are mutually unintelligible, yet they contain many words of nearly identical form, while other members of the Aryan family have in process of time become so unlike affiliated tongues that it requires the most critical study to detect their relationship. As languages are the principal divisions of a linguistic family, so dialects are the subordinate divisions of a language. Family, lan-

guages, and dialects are to linguistic science what family, genera, and species are to biology.

There is an important question which may be considered at this point: To what extent is linguistic relationship to be interpreted as blood relationship; in other words, how far does linguistic classification answer for race classification? In cosmopolitan America, where nearly all speak English, and yet a very large proportion are of foreign parentage, it is obvious that a pure linguistic classification of individuals would largely misinterpret the facts of parentage and race. Nevertheless, taken in connection with readily ascertained facts, it will not mislead even in such an extreme case, and usually a language classification of a tribe or people actually does express race relationship.

To return to the Aryan family. Not only are we able by means of language to class together as related members of one great family the above-mentioned languages, which apparently are so diverse in the sound and form of their words, but by means of word analysis we can reconstruct the past history of the peoples who spoke them, and can get a glimpse even of the mode of life, customs, arts, and religious beliefs of our remote Aryan ancestry. The process by which this is done is sufficiently simple, although, like many other simple processes, its application is not so easy. When we find in the greater number of the languages of a linguistic family the same fully formed word with the same meaning, we are justified in believing that it existed before the separation of the family, and that the thing it signifies was already known to the parent body. Applying the rule to the case of the Aryan family, we learn, that, contrary to earlier theories, our forefathers came from a cold region, since eastern and western Aryan tongues contain names for the birch and pine, and these are the only two tree names common to both branches. The same process continued shows us that the family relations were defined much as they are with us to-day, and that marriages were monogamous. The old Aryans held the land in common, and redistributed it from time to time among the members of the clan. The houses were built of wood, and were entered by means of a door. The communities were settled in villages with a recognized chief or head, and the villages were connected by roads over which travelled pedlers carrying their wares for sale. All were free men. They worshipped natural objects and natural phenomena, more particularly the sun. They believed in the evil spirits of night and darkness. They were a pastoral people, and cattle and sheep formed their chief wealth. They also had goats, pigs, dogs, geese, and bees. They had domesticated the horse, though they did not ride, but employed him, like the ox, for drawing carts. They still used stone implements, though gold and silver and bronze were known. Charms were chiefly relied upon to cure disease. Future events were divined from the flight of birds. These are a few of the facts among many which linguistic science has revealed to us pertaining to the life and achievements of our Aryan ancestry before the historic period. Surely no contemptible record this for a new science.

Let us now turn our attention to the Indian languages of this country, and see what progress has been made in the attempt to classify them. It may be premised that no part of the known world affords a better opportunity for the study of the nature of language and its processes of growth than America. The Indian languages are by no means the most primitive at present spoken by man; and it may surprise some of my hearers to be told that in respect of some of their characteristics they compare favorably with Greek and other classic tongues, though the classic languages as a whole belong to a much higher stage of development. Instead of being mere jargons of words, disconnected with each other and capable of expressing only the simplest ideas, as I find many intelligent people believe, they are in some directions singularly highly developed; and not only are they capable of serving as the vehicle of every thought possible to their possessors, but their vocabularies are extensive, possess many synonymes, and furnish the means of discriminating the nicest shades of meaning.

As a body they are still in that stage of development in which the various processes of language-making may be studied with comparative ease. Just as the various natural processes by which mountains are levelled and the earth's surface carved out and remodelled are more apparent, and more readily studied by the geologist, in the still primitive West, so Indian languages offer to the scrutiny of the linguistic student a similar unfinished condition highly favorable for analysis and study.

For the past fifteen years Major Powell and his assistants of the Bureau of Ethnology, with the aid of many collaborators in various parts of the country, have been accumulating vocabularies by means of which to classify Indian languages. The present provisional results of the study of the large amount of material accumulated show that in the territory north of Mexico there were at the time of the discovery fifty-eight distinct Indian linguistic families, containing some 300 or more languages and dialects.

So far as Language is a competent witness, she has exhausted all the evidence thus far accumulated when she has grouped the Indians in fifty-eight families. Back of this point she may not now go, except as a theorist and in pure speculation. So far as she is entitled to speak authoritatively, these fifty-eight families are separate entities, which never had any connection with each other. But she recognizes her own limitations too well to dare to state positively that this is the interpretation that must be placed upon the results she has attained. When facts from which to draw deductions fail, men may and do resort to theories. Let us glance at the two broad hypotheses which have been based upon the development theory of language. The first is in effect that all the present languages of the earth are not so unlike that they may not have been developed from a single original parent language. By this view the original language is supposed to have changed and developed into all the various forms of speech that are now spoken or that have ever been spoken. According to this view, the families of languages as at present classified have no other significance than as groups of related tongues, the once existing connection of which with other tongues cannot now be proved, because through the process of change the connecting links have been lost.

The second hypothesis assumes that there must have been at least as many original languages as there are now existing families: it assumes, in other words, that the families of speech are fundamentally distinct, and therefore cannot have had a common origin. The first theory postulates that from original unity of language has come infinite diversity; the second, that the tendency has ever been from original diversity towards unity.

Widely different as are these two theories of the origin of linguistic families, they agree in one essential particular: they both remove the origin so far back in time as to make it practically impossible to prove the truth or falsity of either theory. Both of these hypotheses have able advocates; but for a variety of reasons, which time will not permit me to give, the second is deemed the more plausible. At all events, it best explains many difficulties.

There is abundance of archæologic evidence showing that man has resided on this continent for a very long period; and the character of the remains prove that the farther back in time we go, the ruder being he was. Linguistic testimony is to the same effect; and there is no *a priori* reason why man may not have lived upon this continent ages before he learned to talk, — no reason, for that matter, why America may not have peopled the earth, if the earth was peopled from a single centre, or why, if there have been several centres of origin for mankind, the Indians, as they themselves believe, may not have originated here where they were found.

Obviously the fifty-eight families are as likely to have originated here as anywhere else; for remember that every country has linguistic families of its own to account for. Is there, then, any possible theory which will meet the case? There is certainly one that is possible, if not probable. It is the theory, that, whether born from the soil or an emigrant from other lands, our Indians spread over the entire continent before they acquired organized language, and that from not one but from fifty-eight centres sprung up the germs of speech which have resulted in the different families of language. This theory accords with the idea that there may have been but one origin of man, and that in any event all the Indians from the Arctic to Patagonia are of one race. It does not forbid the supposition that the Indian was an emigrant from other shores, though it permits the thought that the American Indian may have originated on American soil.

Though this theory seems more probable than the other, which assumes that the languages of our Indians were brought here from foreign shores, it must be frankly admitted that Linguistic Science is not now, and possibly never will be, competent to decide between them. If she is unable to decide fully as to the origin of the Indian's language, how can she be expected to solve the infinitely more complex problem which concerns the ultimate origin of the peoples who spoke them? She certainly has no solution for this problem now. When she considers the number of linguistic families, and the vast length of time it must have taken to develop their languages and dialects, she finds herself confronted by a problem beyond her present powers. And yet the case is not hopeless. Linguistic Science is still in her infancy, and her future may contain possibilities far exceeding the dream of the most sanguine.

When interrogated as to the origin of the Indian, all that she can now say is, that whether the Indian originated on this continent, where he was found, or elsewhere, it was in bygone ages, — ages so far removed from our own time that the interval is to be reckoned, not by the years of chronology, but by the epochs of geologic time. With such problems she affirms that at present she cannot deal.

I have presented the subject to you to-day, not to answer it, but to aid you in comprehending the tremendous difficulties that enshroud the problem. Much time and ingenuity have been expended in the past in attempting to force an answer to a question which cannot even yet be answered. The question, however, that really concerns the ethnologist of to-day is not *who* are the American Indians, but *what* are they, and what have they accomplished in working out the problems of life, which, ever since his birth, man has grappled with.

In reading the history of mankind, we are too apt to be blinded by the achievements of our own Aryan race. As the old Greeks classed as barbarians all who did not speak their own tongue, so we are prone to think that most of the good that has come to humanity has come through and by means of our race. In truth, there are valuable lessons to be learned from races less high in civilization than our own. Though many and diverse are the roads that lead man to the higher life, they all pursue about the same course, and time only is required to unite them into one broad stream of progress.

Many are the lessons taught by anthropology; but the grandest of them all is the lesson of the unity of mankind, — the unity of a common nature and a common destiny, if not of a common origin.

NOTES AND NEWS.

WE hear that the Russification of the German educational establishments in the Baltic provinces goes on apace. The University of Dorpat, in particular, is suffering in this respect. Recently the Czar specially sanctioned the Russianizing of the faculty of law within the next few years, and now it is intended to transfer the theological faculty from that seat of learning and enlightenment to Moscow or St. Petersburg, in order to deprive it entirely of its German-Protestant character. German culture evidently seems a dangerous element in the eyes of the Russian Government.

— *Nature* states that Herr Victor Apfelbeck, the entomologist, will shortly start, in behalf of the Bosnian Government, on a journey of research in Herzegovina. Last year he discovered in southern Bosnia five new species of eyeless cave beetles, and his investigations excited much interest among entomologists.

— The largest tree in Great Britain, and one of the most famous, is the Cowthorpe oak in Yorkshire, which is believed to be some fifteen hundred years old. When Evelyn wrote his "Sylva," in the seventeenth century, its circumference at the ground was seventy-eight feet; but later, earth was banked up around it, which covered some considerable projections, and reduced its girth. As told in *Garden and Forest*, at the beginning of the last century its branches overshadowed an area of half an acre of ground. The top or leading branch fell at some unrecorded date, curiously slipping down into the hollow trunk, where it remained. In the last century one of the main branches which was blown down proved to be ninety feet in length, and yielded five tons of timber. When carefully measured by Dr. Jessop in 1829, the girth of the tree at the ground was sixty feet, and at a yard above, forty-five feet; the chief remaining limb was fifty feet long and its circumference eight feet, and the height of the tree was forty-five feet. It was then hollow to the top. For many years saplings raised from this tree were sold in pots by the villagers for as much as a guinea apiece. It is now a venerable ruin, but most picturesque in its decay. It stands in a green paddock, carefully protected from injury, with its ancient limbs supported by props. An idea of its size may be gathered from the statement that at least forty persons can stand within its cavity, and that its circumference is greater than that of the Eddystone Lighthouse, which was confessedly designed on the model of an oak.

— Does the cuckoo ever hatch its own eggs? Herr Adolf Müller answers this question in the affirmative, and has given in the *Gartenlaube* a full account of a case which he himself claims to have observed. A translation of this account has appeared in the *Ibis*, and is reproduced in the new number of the *Zoölogist*. The latter periodical prints also a translation of an article in which Herr Adolf Walter disputes the statements of Dr. Müller, who, he thinks, must have made a mistake. The same subject is dealt with in the June number of the *Selborne Magazine* by Mr. C. Roberts, who quotes from "Zoonomia" an interesting passage, in which Dr. Erasmus Darwin expresses his belief that the cuckoo sometimes makes a nest and hatches its own young. In this passage Dr. Darwin gives an extract from a letter of the Rev. Mr. Wilmot of Morley, near Derby, describing an instance brought to Mr. Wilmot's notice in July, 1792, by one of his laborers, and afterwards closely watched by Mr. Wilmot himself. Mr. Wilmot was confident that the bird was a cuckoo.

— There is a note by Dr. Charles Waldstein in the London *Athenæum* of June 8 which will no doubt attract much attention. Dr. Waldstein states that recently, while in Constantinople, he was shown photographs by Hamdy Bey of the sarcophagi discovered some time since at Sidon; and he is of opinion that the discovery is one of the most important made in this century, and, moreover, that excepting the Elgin marbles, and the Hermes of Praxiteles at Olympia, "no works of ancient Greek art have been found of greater artistic interest and merit." One of the sarcophagi contains a portrait of Alexander. Hamdy Bey does not positively assert that this is the tomb of Alexander, but Dr. Waldstein thinks he will be justified in pointing to the possibility of such being the case.

— At the New York meeting of the American Institute of Mining Engineers, February, 1889, Mr. John C. Smock of Albany, N.Y., read a paper on "The Iron-Mining Industry of New York for the Past Decade," from which it appears that the total product of the iron-mines of the State in 1888 was 1,207,000 tons. This sum includes all the returns received from the mining companies and carefully made estimates for three mines unreported. According to the "Ninth Census," New York produced 14 per cent of the iron ore mined in the country. Ten years later, the State produced 1,262,127 tons, or 15.4 per cent, and ranked third in the list of States. In 1886 the production of all the iron-mines in the country, as estimated by James M. Swank, general manager of the American Iron and Steel Association, was 10,000,000 tons. In 1887, according to the same authority, it amounted to 11,300,000 tons. New York mines produced in the former year about 900,000 tons, and 1,100,000 nearly in the latter year, or 10 per cent of the whole. In 1888 the same average proportion was maintained, but the rank changed to fourth, falling behind Michigan, Pennsylvania, and Wisconsin. According to the last report of the American Iron and Steel Association, the total for the United States in 1888 was 12,050,000 gross tons. The fluctuation in the totals for the State during the decade have not been so great as might be inferred from the sharp fluctuations in the prices for pig-iron; and the steadiness in the figures for 1886, 1887, and 1888 is remarkable proof of the enduring capacity of the mines of the State. The variation from year to year is not as great as it is in the magnetic iron-ore districts of New Jersey. The production of the iron-mines in New Jersey in 1880 was 745,000 tons. In 1885 it had fallen to 330,000 tons, and in 1887 had risen to 547,000.